

Appl. No. 09/322,259  
Amdt. dated October 23, 2003  
Reply to Office Action of September 17, 2003

### Amendments to the Claims

1. *(Currently Amended)* A computer implemented method of reducing sinusoidal artifact generation in a vocoder, said computer implemented method comprising the steps of:

a) receiving a determined input energy threshold value below which a suspected noise-inducing codebook excitation vector is expected to be generated by said vocoder; and

b) provided an input signal is received having an energy value lower than said input energy threshold value, using a selection process such that said suspected noise-inducing codebook excitation vector is not continuously generated;

wherein the input signal comprises a plurality of subframes, the subframes encoded at half-rate or greater, at least a portion of the subframes have a zero or low-level input, and each of the subframes having the zero or low-level input results in a randomized selection of a single codebook excitation vector.

2. *(Original)* The computer implemented method of reducing sinusoidal artifact generation in a vocoder as recited in Claim 1 wherein step a) comprises: receiving said determined input energy threshold value having a value of approximately  $4q^2$ .

3. *(Original)* The computer implemented method of reducing sinusoidal artifact generation in a vocoder as recited in Claim 1 wherein step b) comprises:

b1) calculating a sum of squares value for said input signal; and

b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index equals 1, performing a randomization codebook excitation vector selection process such that said suspected noise-inducing codebook excitation vector is prevented from being continuously generated.

4. *(Original)* The computer implemented method of reducing sinusoidal artifact generation in a vocoder as recited in Claim 1 wherein step b) comprises:

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b1) calculating a sum of squares value for said input signal; and

b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index does not equal 1, utilizing said suspected noise-inducing codebook excitation vector.

5. (*Currently Amended*) In a computer system having a processor coupled to a bus, a computer readable memory unit coupled to said bus and having stored therein a computer program that when executed by said processor causes said computer system to implement a method of reducing sinusoidal artifact generation in a vocoder, said method comprising the steps of:

a) receiving a determined input energy threshold value below which a suspected noise-inducing codebook excitation vector is expected to be generated by said vocoder; and

b) provided an input signal is received having an energy value lower than said input energy threshold value, using a selection process such that said suspected noise-inducing codebook excitation vector is not continuously generated;

wherein the input signal comprises a plurality of subframes, the subframes encoded at half-rate or greater, at least a portion of the subframes have a zero or low-level input, and each of the subframes having the zero or low-level input results in a randomized selection of a single codebook excitation vector.

6. (*Original*) The computer readable memory unit as described in Claim 5 wherein said computer program stored therein when executed by said processor causes said computer system performing said step a) to further perform the step of:

receiving said determined input energy threshold value having a value of approximately  $4q^2$ .

7. (*Original*) The computer readable memory unit as described in Claim 5 wherein said computer program stored therein when executed by said processor causes said computer system performing said step b) to further perform the steps of:

b1) calculating a sum of squares value for said input signal; and

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b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index equals 1, performing a randomization codebook excitation vector selection process such that said suspected noise-inducing codebook excitation vector is prevented from being continuously generated.

8. (*Original*) The computer readable memory unit as described in Claim 5 wherein said computer program stored therein when executed by said processor causes said computer system performing said step b) to further perform the step of:

b1) calculating a sum of squares value for said input signal; and

b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index does not equal 1, utilizing said suspected noise-inducing codebook excitation vector.

9. (*Currently Amended*) A computer system comprising:

a processor;

an address/data bus coupled to said processor.

a computer readable memory coupled to communicate with said processor, said processor for performing the vocoder sinusoidal artifact generation reduction steps of:

a) receiving a determined input energy threshold value below which a suspected noise-inducing codebook excitation vector is expected to be generated by said vocoder; and

b) provided an input signal is received having an energy value lower than said input energy threshold value, using a selection process such that said suspected noise-inducing codebook excitation vector is not continuously generated;

wherein the input signal comprises a plurality of subframes, the subframes encoded at half-rate or greater, at least a portion of the subframes have a zero or low-level input, and each of the subframes having the zero or low-level input results in a randomized selection of a single codebook excitation vector.

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10. (*Original*) The computer system as recited in Claim 9 wherein at said step a) said processor performs the vocoder sinusoidal artifact generation reduction steps of:

receiving said determined input energy threshold value having a value of approximately  $4q^2$ .

11. (*Original*) The computer system as recited in Claim 9 wherein at said step b) said processor performs the vocoder sinusoidal artifact generation 20 reduction steps of:

b1) calculating a sum of squares value for said input signal; and

b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index equals 1, performing a randomization codebook excitation vector selection process such that said suspected noise-inducing codebook excitation vector is prevented from being continuously generated.

12. (*Original*) The computer system as recited in Claim 9 wherein at said step b) said processor performs the vocoder sinusoidal artifact generation reduction steps of:

b1) calculating a sum of squares value for said input signal; and

b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index does not equal 1, utilizing said suspected noise-inducing codebook excitation vector.

13. (*Currently Amended*) A method of reducing sinusoidal artifact generation in a vocoder, said method comprising the steps of

a) determining an input energy threshold value below which a suspected noise-inducing codebook excitation vector is expected to be generated by said vocoder; and

b) provided an input signal is received having an energy value lower than said input energy threshold value, using a selection process such that said suspected noise-inducing codebook excitation vector is not continuously generated;

wherein the input signal comprises a plurality of subframes, the subframes encoded at half-rate or greater, at least a portion of the subframes have a zero or low-

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level input, and each of the subframes having the zero or low-level input results in a randomized selection of a single codebook excitation vector.

14. (*Original*) The method of reducing sinusoidal artifact generation in a vocoder as recited in Claim 13 wherein step a) comprises:

determining said input energy threshold value to be approximately  $4 q^2$ .

15. (*Original*) The method of reducing sinusoidal artifact generation in a vocoder as recited in Claim 13 wherein step b) comprises:

b1) calculating a sum of squares value for said input signal; and

b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index equals 1, performing a randomization codebook excitation vector selection process such that said suspected noise-inducing codebook excitation vector is prevented from being continuously generated.

16. (*Original*) The method of reducing sinusoidal artifact generation in a vocoder as recited in Claim 13 wherein step b) comprises:

b1) calculating a sum of squares value for said input signal; and

b2) provided said sum of squares value for said input signal is less than said input energy threshold value and provided that a candidate codebook index does not equal 1, utilizing said suspected noise-inducing codebook excitation vector.